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**A Light Infantry Division for Airland Battle-Future**

**A Monograph  
by  
Major Mark Van Drie  
Infantry**



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## ABSTRACT

### A LIGHT INFANTRY DIVISION FOR AIRLAND BATTLE-FUTURE by Major Mark Van Drie, USA

The battlefield of the future will be a chaotic, non-linear environment where forces are intermingled and highly lethal weapons will cause great destruction and force wide dispersion. Regardless of the exact location of the fight, highly deployable U.S. Army light infantry forces will most likely be committed in any future wars. This paper answers the question of "What light infantry division organizational design can best meet the tactical requirements of the future battlefield?"

In examining this issue, the traditional roles of light infantry and resultant combat power capabilities are juxtaposed against future battlefield characteristics and resultant combat power requirements. This paper notes a high level of congruence between the traditional capabilities of light infantry and the requirements of the future battlefield. It concludes that the dispersed, mobile, small unit tactics of light infantry will dominate the future battlefield. These forces, armed with and supported by highly lethal long range weapons, will be capable of defeating any force, heavy or light, on the future battlefield.

Finally, a light infantry division specifically designed to function on the battlefield of the future is included. The proposed division consists of infantry units that are entirely foot-mobile and equipped with man-portable weapons. The division base is composed of long range howitzers and medium caliber multiple launch rocket artillery along with a large aviation unit consisting of lift and light attack helicopters. Supporting fire delivery systems will be widely dispersed and, as a matter of course, will utilize precision guided munitions to attain close to one shot-one kill capability instead of the traditional reliance on massed fires. The division design is based on the concept of combining the traditionally effective methods of light infantry with modern high technology.

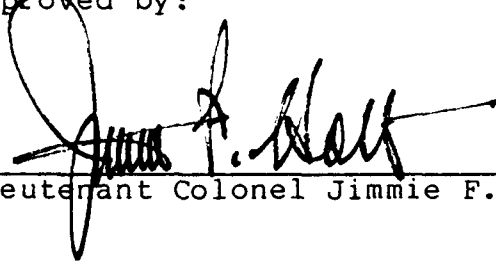
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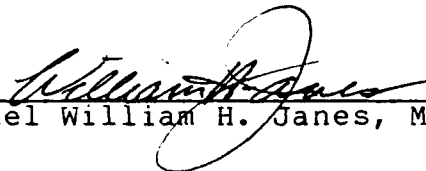
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## I. INTRODUCTION

"Predictions are tough to make, particularly about the future."

-Yogi Berra

The most important task of a peacetime soldier is to prepare for war. While this is normally thought of in terms of unit training and logistic readiness, it also includes the more fundamental task of anticipating the character of future war in order to properly design combat units that will fight that war.

In World War II, the United States had literally years to prepare for the commitment of combat troops and then had ample opportunity to make adjustments during the war. In fact, organization of the standard army division changed six times between 1941 and 1945.<sup>1</sup> Military historian Michael Howard maintains that:

I am tempted indeed to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they have got it wrong. What does matter is their capacity to get it right quickly when the moment arrives.<sup>2</sup>

Based on the recent examples of the Grenada Invasion, the Falklands War, India's Sri Lanka intervention, and Israel's Lebanon invasion, it would seem very important that the Army be prepared to deploy units as they are organized, trained, and equipped into situations where they must fight immediately. Therefore, whether it be doctrine or organization or training, the army must have it very nearly right, or at least more right than the enemy, from the beginning.

The battlefield of the future is likely to be a chaotic, non-linear environment where forces are intermingled and highly lethal weapons will cause great destruction and force wide dispersion. The increasing proliferation of such weapons in "Third World" countries means that this environment will be found not just in a Central European war, but in many other places around the world where United States forces may have to fight. Regardless of the exact

location, highly deployable U.S. Army light infantry divisions will most likely be committed in any future war. This situation raises the question: What light infantry division organizational design can best meet the tactical requirements of the future battlefield?

This paper does present a proposal for a light infantry division organization of the future. However, the thrust of the discussion is on the concept of light units rather than specific considerations as such. The target year of 2004 was chosen as that is the year on which the U.S. Army is focusing its future development activities through a process called AirLand Battle-Future. The key driving force for the proposal will be the characteristics of the future battlefield, the historically derived attributes of light infantry, and how these attributes provide combat power capability. Accordingly, a major portion of this paper will present these factors. The U.S. Army's current light infantry division will not be examined as it was designed for conditions which may change or no longer be relevant on the future battlefield. Additionally, examination of the current organization may promote incremental, evolutionary adjustments to existing concepts versus a design based on future concepts.

In examining this issue, an understanding of light infantry's role on the future battlefield will be gained by comparing future battlefield characteristics with traditional light infantry attributes. The role of light infantry will be expressed in terms of requirements for combat power capabilities. The requirements, in turn, drive a combat power model which produces an organizational design for light infantry tailored for the future battlefield.



## II. COMBAT POWER

Importance of Combat Power: The United States Army's keystone warfighting manual, FM (Field Manual) 100-5, Operations, states that the outcome of battle is decided in favor of the force which applies superior combat power." Clausewitz affirms that dictum when he holds that the most fundamental action an army can take to gain victory in battle is to be stronger than the enemy." Combat power is the measure of that strength. The ability to generate combat power must therefore be the primary concern of an army. The importance of emphasizing this seemingly obvious concept is to counteract the peacetime temptation to stray from it. That temptation is currently embodied in two documents central to US Army operations and planning.

The first is FM 100-5, in which the beginning sentence states that the "overriding mission of US forces is to deter war". Without debating whether deterrence is a military mission or a political strategy, it is clear that in either case to deter war means not to fight. An Army whose "keystone" manual on military operations starts with the statement that its overriding mission is not to fight, establishes a slippery slope which can lead to an Army not designed to fight nor intending to do so.

The second document is the Army's AirLand Battle-Future concept paper. This document is intended to describe the requirements for the US Army in the year 2004 so that the Army may begin now to develop the appropriate capabilities. Future force structure (number and types of organizations) and organizational design are to be based on this concept. This document generously lubricates the already slippery slope as it postulates extensive non-combat roles for the US Army. It includes among its imperatives the development of new types of forces labeled "nation development" along with the "improvement" of other forces so that they may assist in non-combat roles.

Clausewitz said that "the end for which a soldier is recruited, clothed, armed and trained, the whole object of his sleeping, eating, drinking, and marching is simply that he should fight at the right place and the right time."<sup>13</sup> What applies to Clausewitz's soldier applies to the army as a whole. Fighting is the *raison d'etre* for armies. The whole of military activity must directly or indirectly relate to "ability to fight". Any action which an army takes to divert its resources from the development of ability to fight represents a debit against that army's combat power potential. This holds true regardless of the positive capabilities the army may develop in areas other than fighting, no matter how attractive those capabilities may be. For in the final analysis, such capabilities are irrelevant to the fundamental purpose of an army.

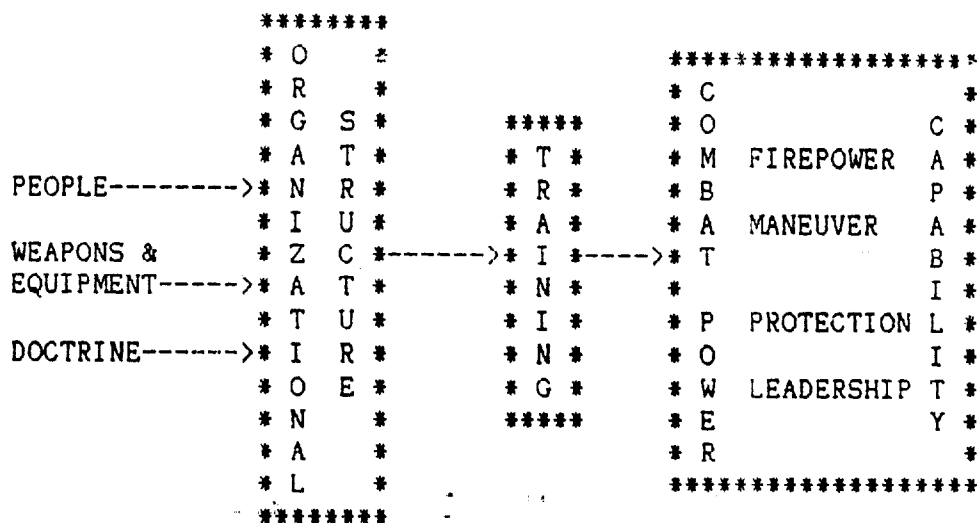
Designing Combat Power Capability: Given the overriding importance of combat power, the question becomes how to get as much of it as possible. Combat power is the ability to fight. It is composed of the combined effects of firepower, maneuver, protection, and leadership. Combat power exists only on the battlefield itself, where combat leaders combine the effects of firepower, maneuver, and protection into an optimal balance and bring the combined effect of these elements to bear against the enemy.<sup>14</sup>

Combat power potential, however, is the capability in terms of firepower, maneuver, protection, and leadership which an organization brings to the battlefield. While the force with the most combat power potential will not necessarily gain victory, clearly it is advantageous to arrive at the battlefield with as high a level of capabilities as possible.

Capabilities in terms of firepower, maneuver, protection, and leadership are derived from three essential components. They are people, equipment, and doctrine. These components are converted into combat power capabilities through organizational design and training programs.<sup>15</sup> Figure 1 portrays this process.

FIGURE 1: DEVELOPMENT OF COMBAT POWER CAPABILITY

--ORGANIZATIONAL DESIGN--



As Figure 1 reflects, the ways to affect the combat power capabilities that an organization brings to the battlefield are to adjust the inputs of people, weapons and equipment, or doctrine; to change their relationships within the organizational structure; or through training programs. Without intending to denigrate the importance of training programs, it is not within the scope of this paper to discuss them as they are transitory in both objectives and effects. Additionally, in general, training programs are a function of organizational design (e.g. implicit in the inclusion of a mortar platoon in an infantry company is the necessity to train that platoon). Organizational design itself includes the process of appropriately combining the three inputs of people, equipment, and doctrine within a unit's structure. It is actually a backward process in relation to the above model as it is based on the projected requirements for certain combat power capabilities. Each method (excluding training) of influencing combat power capability will be discussed in turn.

People: Within the context of generating combat power capabilities, the issue of people must revolve around obtaining soldiers who will fight and who will fight well. For any specific individual it is not possible to identify

ahead of time his propensity for fighting, but the general characteristics of fighters are known.

During the Korean War, the Army contracted the Human Resources Research Office (HumRRO) to make an analysis of infantry soldier combat effectiveness. The purpose was to identify the characteristics which differentiate the "fighter" from the "non-fighter". Researchers had front line infantry platoon members rate the combat behavior of their peers. Based on the ratings of over 2000 soldiers, 310 combat infantrymen were identified as fighters or non-fighters. A battery of tests was conducted consisting of everything from measures of personality and intelligence to life history inventories and aptitude tests. In this multitude of tests, the single factor that most characterized the difference between fighters and non-fighters was intelligence. Fighters scored an average of 94 on the military's general intelligence test versus an average of 83 for non-fighters. Of less magnitude, but still with significance, the amount of education was positively related to fighting performance. The average fighter had approximately one half year more formal education than the average non-fighter.<sup>11</sup>

Technical proficiency also positively correlated with higher levels of intelligence. The Army recently conducted a test of a group of trainees attempting to correctly put a Stinger (man-portable anti-aircraft missile) into operation. Most of the soldiers with high and mid level AFQT (Armed Forces Qualification Test-a measure of general intelligence) scores quickly mastered the task with over 90% getting it right within three tries. However, the low AFQT soldiers took much longer. Approximately one-fourth still could not get it right after 15 tries.<sup>12</sup>

Figure Two shows the World War II distribution of American soldiers by general intelligence category; I being highest and V lowest.<sup>13</sup>

FIGURE 2: DISTRIBUTION OF AMERICAN MANPOWER

	<u>I&amp;II</u>	<u>III</u>	<u>IV&amp;V</u>
Army Air Forces	44.4%	35.3%	20.3%
Army Service Forces	36.5%	28.5%	35.0%
Army Ground Forces	29.7%	33.3%	37.0%
--Infantry--	27.4%	29.0%	43.5%

As shown in Figure 2, the Army Ground Forces, which consisted of combat unit soldiers, was loaded up with lesser quality soldiers. The composition of infantry units within the Ground Forces was even more dismal.

In World War II, American infantry were consistently outfought by their German counterparts. Military historian Trevor Dupuy found that, win or lose, on the attack or on the defense, German troops inflicted about 50% more casualties on Americans than were inflicted on Germans by Americans.<sup>14</sup> Martin Van Creveld's study of this phenomenon concluded that the difference was attributable to a German system that sent the best soldiers to the front versus an American system that, as Figure Three reflects, did exactly the opposite.<sup>15</sup>

The implications are obvious. More intelligent and better educated individuals are better soldiers. They are more technically and tactically proficient. They suffer fewer casualties and inflict more. They are fighters. They provide a higher degree of combat power capability.

Weapons and Equipment: When Phillip of Macedonia lengthened the spears of his army in order to outreach the spears of the other Greek states, he was manifesting just one more step in the still ongoing process of trying to use technical means to obtain an advantage over the enemy. As the most visible contributor to combat power capability, weapons are often perceived as the predominant factors in fighting. However, just as leadership, organization, and tactics (not longer spears!) provided the real secret behind Macedonian tactical success; technical means are simply one factor in the combat power equation.

High technology weapons and equipment provide both advantages and

disadvantages. Advantages include increases in firepower and maneuver capabilities through utilization of tanks, infantry fighting vehicles, howitzers, and helicopters such as in the current U.S. mechanized infantry and armor formations. However, disadvantages also accrue. Fighters become rare as an increased proportion of manpower is dedicated to logistics and support. A tendency is to lower the quality of fighters by assigning more intelligent recruits to the care and maintenance of complex equipment (see figure 2 above). Operations are dependent on extensive and uninterrupted supply and maintenance activities. Mobility and firepower are specialized toward open terrain. German General Uhle-Wettler explained the American setbacks in Korea versus the lightly armed North Koreans and Chinese entirely in terms of the disadvantages of technology.<sup>16</sup>

The key with regard to weapons and equipment and combat power capabilities is to understand two concepts. First is that simple numbers of weapons and equipment provide only "potential" capability rather than "absolute" capability. For example, a tank battalion does not have more "absolute" firepower and mobility capability than a light infantry battalion. What it has is maneuver and firepower "potential" relative to specific terrain. These capabilities are superior to those of a light unit in open terrain while inferior to those of a light unit in close terrain.

The second concept is that combat power capability is composed of a dynamic relationship between the elements of firepower, maneuver, protection, and leadership. Equipment that increases capabilities in one area may negatively affect other areas in ways that act to the detriment of total combat power potential. For example, the introduction of the M-2 Infantry Fighting Vehicle in American mechanized infantry companies brought a large increase in vehicle firepower as the heavy machine gun of the M113 armored personnel carrier was

replaced by the automatic cannon, coaxial machinegun, and antitank missile launcher of the M-2. The cost, however, was a drastic decrease in close terrain maneuver capability as the number of dismounted infantrymen was reduced from 96 in the M113 company to 60 in the M-2 company.<sup>17</sup>

Doctrine: Doctrine is an army's condensed expression of its approach to fighting.<sup>18</sup> On the battlefield it guides the actions of leaders as they convert capabilities of firepower, maneuver, protection, and leadership into applied combat power. Its importance is best demonstrated by the 1940 Battle of France.

The French Army, considered among the best in the world, was defeated in less than two weeks. The victorious German army, in terms of equipment and soldiers, was roughly equivalent or, in some cases, even inferior to the French Army. In fact, the major difference between the two armies was not a physical quantity, but their fighting doctrine. The German doctrine called for fast paced, decentralized, maneuver oriented *blitzkrieg* tactics. The French doctrine emphasized a controlled, centralized, firepower intensive and methodical battle. The superiority of the modern German doctrine proved decisive as the Germans sliced through the French and chopped their army to pieces.<sup>19</sup>

Organizational Structure: An example of the effect which a change in organizational structure can have on combat power is the ancient Roman Army. The Romans initially copied the phalanx formation from the Greeks. The phalanx was an unwieldy formation in which the whole army moved and fought as a single element. Rome soon found that organization ineffective against agile tribesmen in the surrounding mountains. The Roman army then reorganized into a more flexible formation called a manipular legion. Self-contained units, called maniples, of 120 men arranged in a checker-board pattern provided Roman armies the ability to maneuver around the enemy flanks or push forward into gaps in their lines.<sup>20</sup>

In the climactic battle at Pydna in 168 B.C., the Romans fought the Greeks for control of the eastern Mediterranean. Rough ground caused the Greek phalanx to split in the center. Before the gap could be closed, Roman maniples rushed in and the result was a decisive defeat for the Greeks.<sup>21</sup> The Roman army's superior combat power was a function of superior capability to maneuver which in turn was based on changes in organizational structure.

The leadership element of combat power is also profoundly affected by organizational design. In the 1973 Arab-Israeli War, after action reports indicated that often it was only leaders and adjacent soldiers that performed effectively in combat. The immediate example of a fighting leader provided a powerful incentive.<sup>22</sup>

The rapid mobilization of the US Army in World War I created a different type of leadership problem. Professional officers were scarce, so divisions were organized with a large span of control in order to ensure that each had at least a core of trained and experienced staff officers and leaders. As a result, an American division headquarters commanded 27,000 soldiers in its units versus 10,000-12,000 for the British, German, and French divisions.<sup>23</sup> While it is difficult to assess the impact of this decision on American success, it clearly shows the intent of increasing combat power through development of an organizational structure which capitalized on the limited available competent leadership.

An example of the role which organizational structure can play in providing protection for an army is provided by the forces of T.E. Lawrence in the Arab Revolt of 1916-1918. Due to the irregular nature of the Arab Army, there was no formal organizational structure, but there was a principle of organization. The principle was to organize into small, highly dispersed forces to support Lawrence's "fundamental rule of denying him [the Turkish enemy] targets." "



Lawrence's "fundamental rule" was based on the negative effect even a relatively few casualties would have on the ability of Arab forces to fight. This was due to their limited numbers and because of the exaggerated impact of casualties on morale in an irregular force. Arab forces therefore conserved their combat power by organizing into small parties which were difficult to detect and, even if discovered and attacked, were small enough that only a few casualties could result. The outcome of Lawrence's protection of the fighting potential of his forces over the first two years of the revolt was its availability when it counted, to support British General Allenby's decisive offensive of 1918 against the Turks and their German allies.<sup>45</sup>

The U.S. Army's Pentomic division was another example of using organizational structure to enhance combat power capability through improved protection. Intended for combat on a nuclear battlefield, tactical units were designed to be sufficiently small so that they would not present a lucrative nuclear target. The nuclear threat also dictated dispersion for protection, so sub-elements of the division were organized as combined arms units with internal logistical support so that they could defend and sustain themselves when isolated.<sup>46</sup> While this concept was never tested in combat, the intent was clearly to structure the division so as to best protect its fighting potential on a nuclear battlefield.

The capability to generate combat power by means of firepower is also greatly affected by organizational structure. Prior to World War II, the French Army placed a great belief in the predominance of artillery firepower. They held to their World War I based axiom of "... the artillery conquers, the infantry occupies".<sup>47</sup> As a result, French commanders believed that maintaining the preponderance of artillery under the control of corps and higher level headquarters so that they could bring masses of firepower to bear was the most

effective way for a higher level commander to influence the battle.

In the 1940 Battle of France, however, French artillery was noted as generally ineffective when compared to the artillery of their German opponents (who had less of it).<sup>40</sup> The difference, to a large degree, lay in where the artillery was placed in the organizational structure of the two armies. In contrast to the French, the preponderance of German artillery was located with the ground divisions where it was available to provide immediate support for tactical units. The preponderance of French artillery was controlled by higher headquarters where theoretically it could deliver pre-planned, massed fires in support of large units. Out of the 200 total artillery regiments available in the French Army's North-East Front, 56 were in the Front's general reserve.<sup>41</sup> Of the other regiments, many were controlled at army and corps level. The cost of this centralization was loss of responsive fires for tactical units in the fast paced battle.

This case also illustrates the danger of making firepower comparisons based simply on numbers of weapons. German units had more firepower capability with lesser overall amounts of artillery because their organizational structure made their artillery useable. The French failed to turn their artillery firepower potential into a firepower advantage because their organizational structure inhibited the capability of units actually in contact with the enemy to obtain fire support; in spite of the numerous artillery units that were present.

The primary consideration in organizational design is to maximize combat power capability on the battlefield. The variables of people, equipment, and doctrine, are combined within an organizational structure to provide that combat power capability in terms of firepower, maneuver, protection, and leadership. Before going further with organizational design, however, it is necessary to describe the environment within which the organization will function.

### III. FUTURE BATTLEFIELD CHARACTERISTICS

The most important step in designing a military force for the future is to project the characteristics of future battle. All else follows from this step. There are two general categories of characteristics of war. The first category includes those enduring qualities of all wars. The second category includes the characteristics of war peculiar to a particular period.

Atmosphere of War: Clausewitz states that there is an "atmosphere of war" in which all battle takes place. That atmosphere is composed of danger, physical exertion, uncertainty, and friction. Those elements together cause the difference between battle as it is planned and what actually happens. This concept will be used to describe the enduring characteristics of war.

Danger is the quality which causes "the light of reason to refract in a manner quite different from that which is normal" and prevents the mind of a man from working with "normal flexibility".<sup>31</sup> Physical exertion is the effort soldiers expend on overcoming the effects of heat or cold, hunger or thirst, lack of sleep and physical exhaustion. Uncertainty refers to military intelligence, or information about the enemy. It is a great paralyzer of action, for as Clausewitz says: "Many intelligence reports in war are contradictory; even more are false, and most are uncertain."<sup>32</sup> It is uncertainty that causes the fog of war. Friction is the "force that makes the apparently easy so difficult".<sup>33</sup> It comprises all those unforeseen circumstances which ruin plans and frustrate action. Every individual and piece of equipment retains its own quotient of friction, and the least important of all can maximize its friction potential at exactly the right moment to make things go wrong. Friction cannot be predicted or eliminated because it is based on chance. Danger and physical exertion are great catalysts for friction.

The atmosphere of war is time and technology independent. The same

atmosphere was present in both ancient and modern warfare. Its effects are best illustrated by describing the two general approaches to generating combat power in the atmosphere of war. The first approach is exemplified by the French Army in World War II. The French concept was to eliminate fog, friction, and uncertainty by fighting a tightly controlled, methodical battle. They believed that centralized planning and control of execution along with strict adherence to procedural guidelines would eliminate both uncertainty and the likelihood of some "loose cannon" maximizing his friction potential. However, in the 1940 Battle of France when the Germans sliced behind the French units severing command and control, the army "crumbled into helpless fragments" which were incapable of generating the combat power necessary to stop the Germans.

The second approach is to recognize that fog, friction, and resultant disorder and chaos are inevitable, normal, and even insofar as they affect the enemy, desirable. The German infiltration tactics used so successfully in their 1918 offensive were a direct result of this approach. Small "storm trooper" detachments were formed with riflemen, machineguns, grenadiers, flamethrowers, demolitions, and mortars. Artillery was limbered up and prepared to provide direct support immediately behind these detachments. The storm troop commanders were given *minimum* attack objectives and were told to cooperate with, but not to depend on or wait for units on their flanks. The commanders were given considerable latitude and expected to use it. Even individual soldiers were briefed as to objectives and the necessity of taking whatever individual action was necessary without orders. Combining arms at small unit levels was designed to make units tactically self sufficient. They therefore did not have to stop and fight the inevitable friction involved in sending for and bringing forward special weapons and ammunition. (Of note is that in a recent article, a current U.S. brigade commander discusses the difficulty of controlling

specialists like air defenders and engineers as they float from one point of need to another like "flotsam and jetsam". All these measures were designed to enable small unit leaders to quickly generate combat power in the danger, fog, and friction of war.

The atmosphere of war is always present in battle. Confusion and chaos are therefore inevitable. Centralization of resources and decision authority, as the French did, will not eliminate the atmosphere of war, but will reduce the capability of subordinate units to cope with it. Thus the collapse of French units when cut off or isolated from their headquarters. Generation of combat power within confusion and chaos requires mission type orders and wide latitude for the leader on the spot to make decisions on how to combine the elements of firepower, maneuver, and protection to accomplish the mission. Incumbent with decentralized decision authority is the decentralization of resources to enable the decision to be carried out. This calls for units organized in the combined arms manner of the German storm trooper detachments. Units must be tactically self-contained and capable of independent action. This became more important with the phenomenon of reduced unit density on the battlefield.

Empty Battlefield: In antiquity and on up through the Napoleonic era of warfare, armies were normally deployed in densely packed masses designed to maximize the cumulative combat power of individual soldiers carrying short range weapons. However, beginning in 1870 with the Franco-Prussian War, observers began to remark on the increasing dispersion of troops on the battlefield. The term for this phenomenon is the "empty battlefield". Understanding this concept is key to understanding the battlefield of the future because there is every indication that the trend toward increased dispersion will continue.

The empty battlefield came about through two factors. The first is

technology and the second is ideas. Technology driven increases in weapons lethality contributed to the empty battlefield in two ways. The first is by increasing the amount of firepower which could be generated by an individual soldier. The second is by causing soldiers to decrease their vulnerability to this greater lethality.

Increasing the amount of firepower generated per soldier enabled armies to place fewer soldiers in the firing line while maintaining or even increasing coverage of a given area with fire. This phenomenon was a function of increased range, accuracy, rate of fire, and casualty creating effects of weapons.

Increases in weapons ranges started with the transition from the musket (100 meters) to the rifle (1000 meters) and is an ongoing process for both direct and indirect fire weapons (see appendix 1, figure 1). The effect has been to steadily increase the depth of the tactical battlefield as weapons ranges increase. As this increase is a function of technology, it can be expected to continue. On the other hand, theaters of operations and theaters of war are based on political and geographic considerations and are normally fixed for a particular conflict. A ramification is that the depth of the tactical battlefield could eventually expand to include the entire depth of the theater.

Concurrent with increases in range has come increases in the ability to accurately hit targets. Technology such as thermal imaging enables weapons to be accurately fired at night and in all types of weather. Computerized fire direction procedures combined with sophisticated navigation systems enable artillery to fire effectively without adjustment. Autonomously homing and laser guided munitions provide pin-point accuracy (less than 1 meter probable error) (see appendix 1, figure 2). The overall trend is toward weapons systems capable of achieving a high probability of hitting the target each time they are fired.

Technology has also greatly affected the rate and weight of fire over the

years. Magazine fed rifles, power assisted loading for artillery, and aircraft which can deliver literally tons of munitions on target have tremendously increased the capability of soldiers to cover any area in range with a high volume of fire (see appendix 1, figure 3). Less forces are needed to cover a given area with fire. A basic example of this concept is the achievement of the same fire effect by replacing several riflemen with one machinegun.

The trend of greater munitions lethality over the years is very similar to those described above. Cannon balls have given way to artillery shells which can carry poison gas, cluster bomblets, or even mines. Individual soldiers can carry light mortars and grenade launchers whose projectiles can cause multiple casualties. Shaped charge warheads can pierce armor or fortifications. Napalm and fuel-air explosives can destroy entire areas. The trend is toward increasing the radius and certainty of damage for area weapons and toward increasing the probability of a kill for point weapons.

The bottom line of these increases in weapons ranges, accuracy, volume of fire, and lethality of effect is that armies achieve the same firepower effect in a given area with far fewer soldiers. By way of illustration, at Waterloo the Duke of Wellington had 72,000 soldiers defending a six kilometer front. In 1980, the doctrinal defensive frontage for a United States Army infantry battalion of 720 soldiers was the same six kilometers.

The "flip side" of increased lethality is the effect it has on the soldiers on the receiving end of the fire. Groups of soldiers simply provide a more conspicuous target on which these deadly fires could be focused. For example, in 1896 a group of 18 Boer riflemen equipped with rapid firing long range rifles killed or wounded over half of the two battalions worth of British soldiers who attacked them in close-order formation.<sup>11</sup> Armies have learned to reduce their vulnerability by dispersing their soldiers both laterally and in depth.

Any soldiers who were clearly visible became targets. As a result, soldiers began to hide. They laid down on the ground. They dug holes. They camouflaged themselves and their equipment. They dispersed so as not to be hit by the effects of fire aimed at another soldier or piece of equipment. The U.S. Army today teaches its soldiers to crawl under fire or to "rush" in 3-5 second sprints from one covered position to another. Lethality of fire resulted in survivability to become equated with dispersion and invisibility.<sup>41</sup>

Improvements in technology contributed further to the empty battlefield by enabling soldiers to reduce their vulnerability while fighting. Technological advances were made in such areas as smokeless powder and magazine fed rifles. Without the characteristic puff of smoke from black powder, riflemen could now fire relatively anonymously. With magazine-fed rifles, soldiers were no longer vulnerable during the lengthy reload process. They could also reload and fire while lying down, further reducing their vulnerability. Indirect fire artillery was the next innovation. Soldiers could now deliver fire from completely out of sight and sound of the enemy.<sup>42</sup>

Technology as applied to communications and mobility also increased dispersion. Radio and wire communications allowed orders and information to pass over extended distances instantaneously, thus allowing forces to operate at greater distances from their headquarters.<sup>43</sup>

Increases in mobility technology caused further dispersion as forces could now spread out for protection and deception and then assemble quickly to concentrate overwhelming combat power capability at a specific point, and, just as quickly, disperse again. Mobility under fire was provided by tanks with armored protection and tracks to enable off-road movement. Vehicular provided combat mobility came at a cost, however. Large portions of unit resources had to be provided for vastly increased supply and maintenance needs. The cost of



combat element local mobility was a large, unwieldy, and vulnerable logistics organization which caused the force as a whole to retain essentially the same mobility as armies marching by foot.<sup>44</sup>

Technology derived mobility, with the exception of the helicopter, is terrain dependent<sup>45</sup> (see appendix 1, figure 4). Vehicular mobility has greatly increased movement potential in open terrain such as farmlands, plains, and deserts. However, the mobility of the boot still gives the greatest maneuver potential in close terrain. The helicopter provides a different kind of mobility which is constant everywhere. It can use terrain, but is not dependent on it for mobility as ground forces are.<sup>46</sup>

Mobility is also a function of protection. Implicit in figure 4 to appendix 1 are the empty battlefield concepts of protection through dispersion and fast movement (relative to specific terrain types) for both light and heavy forces. The major difference in protection is the reliance on invisibility for light forces and armor for heavy forces.

Dispersion was also furthered by the development of ideas as exhibited in new forms of tactics. Armies progressed from moving and fighting as single units, such as the Greek phalanx, to armies that still moved as one body, but had the capability to maneuver sub-elements on the battlefield, such as Frederick the Great's army. Bourcet's ideas of "march divided, fight united" were exploited by Napoleon with his dispersed "net" of separate army corps advancing on a broad front.<sup>47</sup> The elder Von Moltke built on Napoleon's "march divided" practice, but instead of uniting his armies on the battlefield and then fighting, his armies were employed as separate maneuver elements on the strategic (today's operational) flanks. This increasing lateral dispersion reached its zenith in World War I when, in an initial series of maneuvers by both armies to outflank each other, they stretched their fronts from Switzerland

to the sea.

New technology then interacted with ideas to produce new tactics. In World War II, the German *blitzkrieg* combined lateral dispersion with quick concentrations on narrow fronts to achieve breakthroughs into the enemy's depth with combined air-ground forces. As a result, forces became dispersed in depth along actual or anticipated breakthroughs as well as in breadth along the line of contact. The scale of success of these tactics was primarily a function of the maneuver capability imparted by the armored mobility of tanks along with supporting aircraft.<sup>49</sup>

At the same time, Mao Tse Tung was employing tactics of combined guerilla and conventional warfare in China that caused further dispersion. Guerillas operated throughout the Japanese rear, forcing numerous small detachments to be scattered guarding lines of communication and key installations. Chinese conventional type forces fought a war of movement in which retreats, flanking maneuvers, and advances were conducted over hundreds of miles by various forces on a battlefield that was both linear and non-linear at the same time.<sup>50</sup>

More recently, the Vietnam war and 1973 Arab-Israeli War demonstrated two different approaches to warfare that each represent the drive toward further dispersion and non-linearity in different ways. The North Vietnamese "gnat swarm" tactics involved numerous small actions throughout South Vietnam every day.<sup>51</sup> The result was a dispersion of opposing forces throughout the entire country. There were no lines or front or rear. Or, from another perspective, the front lines were anywhere forces were and both the front and the rear were everywhere. A similar situation occurred with the *Mujahadeen* in Afghanistan in their war against the Russians and their puppet government.

After initial reverses, the Israelis used fast moving, mobile armored units to attack where the enemy was not or was weak in order to get into his rear;

thereby turning and dislocating enemy forces both in the Sinai and in the Golan Heights. By seeking gaps in enemy positions, Israelis increased dispersion between their forces and the enemy's. By striking deep, the Israelis increased dispersion within their own forces. Turning the enemy caused him to disperse his forces to meet the Israeli threat. The subsequent dispersion, unlike the Vietnamese example, was uneven. There were several intermingled concentrations of both Arab and Israeli forces along with a few forces isolated and some areas where no forces existed from either side.<sup>51</sup>

Military historian Trevor N. DuPuy quantified this trend toward increasing dispersion with the following figures:

FIGURE SEVEN: BATTLEFIELD DISPERSION<sup>52</sup>

<u>Period</u>	<u>Density (Meter<sup>2</sup> per man)</u>
Antiquity	10
American Civil War	257
World War I	2,475
World War II	27,500
October War of 1973	40,000

All the forces that created the empty battlefield are continuing. The technological trends are to create weapons with even more range, accuracy, and lethality. The dual factors of needing even fewer soldiers to generate even more firepower and the danger of concentrating within the reach of the enemy's firepower will continue to drive forces toward increased dispersion. In 1969, General William Westmoreland made the following statement:

I see battlefields on which we can destroy anything we locate through instant communications and almost instantaneous application of highly lethal firepower. With first round kill probabilities approaching certainty, the need for large forces to fix the opposition physically will be less important.<sup>53</sup>

While he was premature with his statement in 1969, his description is right on target as it applies to the battlefield of the future.

#### IV. LIGHT INFANTRY CHARACTERISTICS

... the Aetolians attacked the Athenians, running down from the hills on every side and showering javelins upon them, then retreating whenever the Athenian army advanced and advancing whenever they retreated. The Aetolians kept plying their javelins, and being swift of foot and lightly equipped, caught many and slew them, but the greater number got into the forest, and the Aetolians set the woods ablaze around them. Then every manner of flight was essayed and every manner of destruction befell the army of the Athenians.<sup>54</sup>

The above passage was written by Thucydides about a battle in 426 B.C. between the heavily armed and armored hoplites of Athens and the lightly armed, but very mobile Aetolians. It clearly illustrates that the light infantry concept is not a new one.

The traditional light infantry concept has its roots in countless actions of the type described above. Many regular and guerilla type units have achieved success against larger and better equipped forces by using the same hit and run tactics, light-footed mobility, and resourcefulness that the Aetolians used against the Athenians. In more modern times, light infantry has ranged in composition from entire armies, such as the Chinese Communist Forces of the Korean War, to separate components of armies, such as the Chindits of World War II's Burma Theater, to completely irregular forces such as the *Mujahadeen* guerillas in Afghanistan. Regardless of the exact genesis or composition of such forces, they all share certain salient characteristics which identify them as light infantry. Those characteristics have been summarized as follows:

... Although they share many of the skills of regular infantry, they are especially distinguished by their attitude of self-reliance, their mastery of the environment, their versatility, and their high esprit. These characteristics produce a special tactical approach to the battlefield. Offensively oriented, flexible, adaptable, and innovative light infantry capitalizes on stealth, surprise, speed, and shock. Not psychologically tied to a supply line or to the availability of combat support, light infantry operates at night hitting the enemy hard when and where he does not expect it. Light infantry relies on its own resources and its own organic weapons to destroy the enemy at close range. Light infantry believes the light infantryman is the decisive weapon.<sup>55</sup>

Guerilla Antecedents to Light Infantry: The above could just as aptly describe the soldiers of many guerilla movements and, in fact, is more generally

descriptive of guerillas than it is of the uniformed armed forces of most modern nations. The congruence between guerilla and light infantry tactics should not be surprising, however. Most light infantry forces have been developed either to combat guerillas or else in a desire to imitate the successful tactics of guerillas against orthodox forces.

Roger's Rangers was a light infantry unit that typifies this process. It was composed of companies of frontiersmen, well versed in fieldcraft, who moved rapidly through the American wilderness and used the Indians' own tactics of hit and run raids, stealth, and ambushes in order to effectively combat them. The success of the Rangers caused the British commander, Lord Loudoun, to attach liaison officers to the Rangers. These officers were subsequently used to form the cadre of the British army's first light infantry regiment.<sup>14</sup>

Another example is in the formation of the World War II U.S. Marine Corps Raider Regiments. Marine Lieutenant Colonel Evans Carlson served as an observer for two years with Mao Tse Tung's Eighth Route Army. Impressed with the effectiveness of Mao's guerilla tactics, he lobbied the Marine Corps into forming a unit, the Raiders, that incorporated many of Mao's tactical tenets of organization, endurance, self-sufficiency, and foot mobility. Based on the Chinese practice, he organized each squad into three teams to better enable decentralized small unit action (This squad organization was later adopted by the entire Marine Corps and is still in use today). The Raiders subsequently became renowned for their tactical exploits against the Japanese.<sup>15</sup>

The congruence between light infantry and guerillas has been noted by several influential military observers. German General Uhle-Wettler and British military theorist Richard Simpkin both advocate the organization of light infantry formations trained to operate "partisan style"<sup>16</sup> or as "quasi-guerillas"<sup>17</sup>. Dr. Paddy Griffith, senior lecturer in war studies at Sandhurst,

believes that guerilla tactics have a general relevance to the future of war for all forces.<sup>60</sup> The main difference between the two appears to be light infantry's status as a part of a formal army versus the normally irregular status of guerillas. In that case, there is no compelling reason that the methods of the guerilla and those of the light infantry cannot be interchangeable.

Typical operating characteristics of light infantry, along with examples in practice, are listed below. The characteristics are categorized by how they affect combat power capability and are listed under the headings of the elements of combat power: firepower, maneuver, protection, and leadership.

Firepower: *Mostly manportable weapons to ensure a high level of foot-mobility.* The Chinese Communist Forces attacked across the Yalu River in 1950 with no weapons heavier than mortars. The lightly equipped Chinese moved off the roads and traveled further and faster than their heavier armed, motorized opponents in the United Nations forces. The Chinese repeatedly raced into rear areas to cut-off UN combat forces faster than they could retreat.<sup>61</sup>

*Normally relies on own close-in weapons.* The North Vietnamese Army was notorious for allowing American forces to approach within 30 meters before opening up with a hail of automatic weapons fire, then breaking contact and dispersing before the American fire support could effectively react.<sup>62</sup> Combined arms effects are created with the normal light infantry weapons of mortars, machine guns, grenades, and rifles. Mortars are the light infantry artillery. Merrill's Marauders attribute their ability to fend off pursuing Japanese to the skillful use of combined mortar and machine gun fire.<sup>63</sup>

*Any heavy fire support such as artillery, ground attack aircraft, and helicopters is provided by higher headquarters, if used at all.* When the Chindits in Burma were operating 200 miles behind Japanese lines and needed

heavy fire support, the role was filled by fighter-bombers in direct support.<sup>64</sup>

*Accurate fires and strict fire discipline are essential.* Limited carrying capability and the difficulty of resupply require that no ammunition be wasted. In World War I, Lieutenant Erwin Rommel commanded mountain infantry in the Carpathian Mountains. When he had the battle in hand, even while the enemy still presented easy targets, he ordered cease fire simply to conserve ammunition in an environment where resupply was difficult.<sup>65</sup> The commander of Merrill's Marauders of World War II attributed "superior marksmanship" as the single most important factor in its operations.<sup>66</sup>

*Enemy weapons and expedients are used to ameliorate friendly shortages and supply difficulties.* Examples are legion. The Aetolians used fire to burn out the Athenian army. The Tyrolians stopped Napoleon's Bavarian allies at one point with falling trees and rockslides.<sup>67</sup> The North Vietnamese Army recovered American "dud" artillery ammunition that was fired at them and made boobytraps and mines. Americans under the "Swamp Fox" in the Revolutionary War shot flaming arrows into one British fort to cause its surrender.<sup>68</sup> In a talk at the U.S. Army's Command and General Staff College in 1989, the commander of China's People's Liberation Army revealed that as a young soldier in the Korean War he had been sent into combat with only a knife in the expectation that he would later be armed with captured weapons.<sup>69</sup>

*Individual soldiers can effectively employ all weapons within a unit and can control the fires of normal supporting weapons.* The American Army's Merrill's Marauders conducting independent operations against the Japanese in World War II had trained their soldiers to become proficient on all the weapons in the battalion plus demolitions and calling for artillery and mortar fire.<sup>70</sup> As a result, whenever casualties occurred to a mortar man, forward observer, or other specialized individual, another soldier was ready to take his place.

*Extensive use is made of mines and boobytraps. The Afghan Mujahadeen used mines with such effectiveness that convoys on the 450 kilometer main highway from the Soviet Union to Kabul were reduced to the pace of accompanying mine clearing units for almost the entire journey. In 1983, four years after the Soviets entered Afghanistan, the 450 kilometer trip was still taking two weeks.<sup>71</sup> The British forces fighting the Indonesians in Borneo made extensive use of mines with tripwires or "mechanical ambushes" to cover known and probable enemy routes. This not only slowed enemy operations, but it served as a type of security measure.<sup>72</sup>*

*Maneuver: Superior foot mobility is capitalized on to move through difficult terrain to strike the enemy in an unexpected place or from an unexpected direction. In 1943, the American Fifth Army was stopped on its drive up the Italian peninsula by entrenched Germans on the key terrain of Mount de la Difensa. Ten days of infantry attacks supported by heavy air and artillery bombardment had failed to dislodge the Germans. On the night of 2 December, the FSSF (First Special Service Force) ascended 3000 feet up the supposedly unclimbable northeast face in fog and a freezing rain. The subsequent surprise enabled the FSSF battalion to seize in three hours the positions which had previously held off the entire 3d Infantry Division for ten days.<sup>73</sup>*

*Maneuver through ubiquity. Gain and maintain positional advantage by already being everywhere the enemy goes. S.L.A. Marshall described how the American 2d Infantry Division and its attachments took about 3000 casualties in one day on its retreat from the Chinese offensive in Korea during November 1950. The division pushed down a six mile road along which the Chinese had positioned an estimated forty machine guns and ten mortars. While these fires were never massed, the cumulative effect was to kill or wound 25% of the division. Similar but less dramatic tactics were used in Vietnam to demoralize American*



and South Vietnamese troops and cause a constant casualty drain by using "gnat swarm" tactics. Numerous small actions occurred every day throughout the country at military bases, in towns, on roads, and in the field as the North Vietnamese Army conducted rocket and mortar attacks, sniping, ambushes, and sabotage along with emplacing mines and booby-traps. The goals were raising the enemy's anxiety level, destroying his self-confidence, and causing him to constantly look over his shoulder everywhere he went.<sup>25</sup> Clausewitz also covered this subject when he discussed operations in the enemy's rear areas. He described "skillful raiders who must move daringly in small detachments and attack boldly, assaulting the enemy's weaker garrisons, convoys, and minor units . . . The numbers of these units matters more than their individual strength".<sup>26</sup> Later, Clausewitz added that this "explains the highly dangerous character that a march through mountains, forests, or other types of difficult country can assume . . . at any moment the march may turn into a fight . . . The enemy's only answer is the sending out of frequent escorts as protection for his convoys, and as guards on all his stopping places, bridges, defiles, and the rest."<sup>27</sup>

*Do not impair maneuver capability by acquiring "helpful" equipment which negates foot mobility.* In 1837, Czar Nicholas of Russia sent his army to conquer the Daghestan nation in the Caucasus. Expedition after expedition was repulsed with heavy losses over a period of seventeen years as the Tartars conducted ambushes and hit and run raids in the rugged terrain. At the outset of the Crimean war in 1854, the British presented several cannon to the Tartars to assist them in their fight against the Russians. Shamyl, the leader of the Daghestan army, then adopted more conventional tactics so that he could use his artillery and was thereupon defeated in a set-piece battle.<sup>28</sup>

*Constant patrolling and reconnaissance are key to obtaining the detailed information which enables light forces to gain positional advantage.* In the

Malayan Emergency of 1952-1962, British light infantry located guerilla parties with reconnaissance elements and then maintained surveillance while the assault party was brought forward. The detailed information obtained on the camp enabled deliberate attacks to completely destroy guerilla bands.<sup>60</sup> In a similar manner, but with the intent to avoid the enemy, Lieutenant Rommel habitually sent out multiple patrols. The first patrol that would find a path leading into the enemy's rear would send back word and Rommel's main force would follow.<sup>61</sup>

*Infiltration and stealth characterize movement.* The North Korean and Chinese Communist conduct of the war in Korea has been described as an "endless succession of infiltrations". Their standard pattern was reconnaissance, identification of weak points, noiseless movement, and strict fire discipline; all accomplished at night.<sup>62</sup>

*Attacks are targeted against specialized targets designed to disrupt enemy operations.* The primary targets of North Korean infiltrating light infantry were the command posts, artillery, and service support organizations in the rear. When forward forces pulled back, they found their line of retreat blocked. If reserves came forward, they were ambushed enroute. These tactics were even used for counterattacks. After the reinforced US 25th Division of 24,000 men made initial gains in an attack out of the Pusan perimeter, the 4,000 man North Korean 6th Division counterattacked by infiltrating through the American infantry across mountainous terrain at night and then wiping out a number of artillery batteries. The subsequent attack to the rear by the U.S. infantry plus displacement by the remainder of the division to get out of the way ended up with the Americans back at their initial attack positions.<sup>63</sup>

Protection: *Dispersion inhibits enemy acquisition and destruction of worthwhile targets.* The North Vietnamese Army normally moved in small groups to prevent detection and to minimize casualties when discovered. Their typical

technique for a major action was known as "one slow, four quick". The one slow action was the detailed reconnaissance of routes and the objective along with prepositioning weapons and other supplies. The four quick actions were:

- 1-Rapid, dispersed movement to the battle area.
- 2-Sudden concentration and attack.
- 3-Quickly police battlefield for weapons and casualties.
- 4-Disengage and rapidly disperse.<sup>133</sup>

*Use "hit and run" tactics; do not become decisively engaged.* Clausewitz was speaking of insurgent warfare, but his point applies to light infantry when he stresses that such units should never allow their operations to turn into a positional defense. Better that they "scatter and continue resistance by means of surprise attacks, rather than huddle together in a regular defensive position" where they risk being destroyed.<sup>134</sup> Mao Tse Tung reinforced Clausewitz's point when he said "Running away is the best way of regaining the initiative".<sup>135</sup> This does not mean to preserve the force in the fashion of Wellington when he did not attack the French in front of Lisbon because "... this is the last army England has, we must take care of it."<sup>136</sup> Rather, it means to take action, but maintain the initiative much as the North Vietnamese Army did with their "one slow, four fast" technique in order to break away and live to fight again. From the American viewpoint, infantry Lieutenant Philip Caputo recounted the frustration of dealing with these tactics when he described his first action in Vietnam as "... like so many of the thousands of firefights that were to follow, it began with an ambush and ended inconclusively".<sup>137</sup>

*Use night, adverse weather, and close terrain for protection.* Using these conditions in battle is a traditional force multiplier for light infantry. Francis Marion was not called the "Swamp Fox" because of an ability to entrench. Rommel and his mountain infantry were masters of using rough terrain and woods

to conceal their movements into the enemy rear. Lieutenant Rommel regarded rain and snow as "attack weather".<sup>500</sup> The Finnish light infantry in the 1940 Winter War used thick forests for protection and concealment against the overwhelming Russian superiority in tanks, artillery, and aircraft. In the destruction of one Russian division and the mauling of another at Suosalmi, the Finns traveled on skis through the woods. Moving parallel to the roads on which the heavily equipped Russians were travelling, they emerged to conduct raids and ambushes and then disappeared again. The weakened Russian columns then broke into smaller segments which were encircled and destroyed in detail.<sup>501</sup>

Leadership: *Habitual use of small unit tactics requires a high density of competent leaders.* In Borneo and Malaya, British light infantry would go on small unit patrol operations in the jungle for days and sometimes weeks at a time. Each patrol leader required skills in tactics, land navigation, radio communication, artillery forward observation, and directing the use of helicopter and fixed wing aircraft for fire support and logistic operations.<sup>502</sup> The success of these patrols was only possible because of the high density of well trained officer and NCO leadership.

The traditional operating attributes of light infantry; small unit operations, mobility, stealth, surprise, along with all the other characteristics listed above; reflect a remarkable congruence with the requirements for operating on the battlefield of the future.

## V. LIGHT INFANTRY ON THE FUTURE BATTLEFIELD

Given the characteristics of both light infantry and the battlefield of the future, it is possible to develop a conceptual framework of how light infantry would fight on that battlefield. However, it is clear that there is a role for two types of forces; foot-mobile light and vehicle powered heavy. Both will have the firepower capability to destroy anything on the battlefield. Both will be organized along the lines of small, self-contained units. The soldiers of both must be of high quality, capable of independent judgement and action. The tactical "mindset" for leaders of both type of forces will be akin to the traditional light infantry mindset of innovativeness, self-reliance, and offensive orientation. The main difference is based on terrain and how it affects maneuver and protection capabilities. Maneuver capability improves with the capability of forces to move fast(!). Fast movement in close terrain requires foot-mobility. In open terrain it requires vehicular mobility. Protection capability in any environment will also require fast movement to inhibit enemy target acquisition and limit time of exposure to fire. In close terrain, protection is also heavily dependent on invisibility through stealth and camouflage. In open terrain, armor protection may still be necessary.

As both forces will have the capability to destroy all targets, the employment of heavy forces and light forces will not be enemy dependent. Instead, it will be terrain dependent, as terrain is the determining factor in differences between how light and heavy forces are designed to generate combat power. Since terrain normally is not exclusively open or close, but consists of a mixture of both types to varying degrees, then forces must also have the capability to modify their composition based on terrain considerations. Therefore, both light and heavy forces must have the organizational capability of being subdivided and task organized.

Based on the projected characteristics of the future battlefield as described in Section III and the historically derived attributes of light infantry as described in Section IV, it is possible to project the combat power capabilities which light infantry should possess in order to operate effectively on the battlefield of the future. These capabilities are essential as they provide the basis for organizational design. Categorized by the elements of combat power, these capabilities are discussed as follows:

Firepower: Firepower capability will be based on a combination of numerous man-portable close-in weapons and a mixture of long range rockets and artillery along with helicopter delivered fire support.

Manportable weapons will be tailored for the mission and enemy. The ease of operation of modern weapons such as Stinger ground to air missiles and the new Anti-Armor Weapon System Medium (AAWSM) will enable all soldiers to use them. This gives commanders more versatility in providing the appropriate density of a particular type of weapon to a specific force. The same ease of operation and versatility criteria also apply to new lightweight engineer munitions such as mines and demolitions with arming, disarming, and firing accomplished through remote radio control. The organizational effect is that full time specialists will not be needed. All light infantry soldiers will be proficient in all manportable type weapons. Weapons other than those for personal use will be consolidated and issued for training and specific missions only.

Fire support will be of two categories. The first is destruction fires and the second includes area type suppression and neutralization fires. Destruction fires will be accomplished with either autonomously homing or laser guided warheads. Delivery means will be mortars, long range howitzers, and aircraft. Mortars or long range rockets will deliver area fires. Due to the fleeting

nature of targets for either destruction or area fires, the time from target detection to delivery of munitions must be minimal. Ramifications for organization are several. First, reliance on indirect destructive fires means a very high density of target designation and communications equipment. Second, all indirect fire means must be helicopter transportable and capable of long range fires to provide the flexibility necessary on a highly dispersed battlefield. Finally, while effective area fires require instantaneous high volume delivery of munitions, destruction fires with precision guided munitions require a very low density of munitions and delivery systems. The traditional support relationship of a battalion of artillery for a brigade or regimental sized organization was based on a concept of massed fires to support large units using centralized fire direction. Needing only to fire a few rounds at a time in support of a small unit and with fire direction capability on each howitzer, smaller artillery organizations and decentralized support relationships that can be further sub-allocated are necessary to ensure responsiveness.

The battlefield of the future can be expected to dictate a necessity to provide destruction type fires on hard targets that may be too numerous for a small ground element to destroy or designate to artillery requires a responsive direct fire capability. This requirement can be met by including attack helicopters in the organization.

Maneuver: Light infantry must be optimized for mobility in close terrain where the greatest possibility of realizing its potential can be expected. Therefore, light infantry organizations must include only manportable equipment and no vehicles. Vehicles inhibit light infantry maneuver through their requirement for roads and logistical support. The requirement to quickly move fire support to within range along with providing necessary logistic and medical evacuation support to dispersed small units means that transport helicopters are

necessary. Gaining positional advantage through ubiquity means that a very high number of sub-units such as teams, squads, and platoons must be generated. Just as in firepower, this also requires a high density of communications means at lower levels. Desired movement through close terrain, adverse weather and at night will be facilitated by position locating equipment and night vision devices. To enable independent maneuver, service support must be divisible into sub-elements equal in amount to the number of major units being supported.

Protection: Dispersion through operations in numerous small units and invisibility through stealth and quick movement through close terrain provides protection for infantry. This means all equipment must be "infiltrateable". Artillery and rocket fire support along with combat service support and aviation assets are protected by operating at long ranges from 100% mobile, dispersed bases. Artillery is employed singly and in platoons and displaces frequently to avoid counterfire. It therefore needs 100% ground mobility and airmobile capability. Due to a high tempo of airmobile operations, air to air and radar homing (anti-radiation) missiles must be available as well as radar jamming capability. Combat support and service support elements are vulnerable to air attack due to their larger signature, so dedicated air defense is necessary.

Leadership: Dispersed small units require a high density of leaders. The capability for independent operations and decentralized decision making requires that units have the equipment, personnel, and weapons to execute decisions.

Long distances from light infantry units to higher level military intelligence assets can inhibit the spread of information and will thereby degrade the decision-making process. Military intelligence manportable electronic warfare assets along with linguists must therefore be decentralized.

Organizational Design: The purpose of organizational design is to create an organizational structure that establishes relationships between units,



people, weapons, and equipment to provide the firepower, maneuver, protection, and leadership capabilities described above. Accordingly, any similarity of this paper and existing "light infantry" organization is coincidental.

The structure chosen for illustration is a division as that is the lowest level at which all the necessary types of combat, combat support, and combat service support elements are integrated into a single unit. While a brigade type organization can incorporate many of these elements, it would be inefficient to take long range, flexible and quickly responsive assets such as aviation, rocket launchers, and artillery away from divisional control and parcel them out to brigades on a permanent basis where they might be too little or too much for a given mission. Instead, keeping the most flexible type units assigned to a central headquarters allows the commander to task organize or assign support relationships to provide the appropriate mix of maneuver, firepower, and protection capability to each of his subordinate elements based on specific missions. Since aviation and indirect fire systems provide essential combat power capabilities to light infantry on the future battlefield and as their inherent flexibility lends itself to centralization to enable the commander to tailor his force to the mission, the light infantry organization must include a division base with indirect fire assets and aviation.

Proposed Light Infantry Division: Appendix 2 shows a diagram of the division. Each of the major elements of the division is described below in terms of organizational structure, weapons and equipment, people, and doctrine. Deployability was not examined, but the proposed division is designed for cogent tactical reasons to be lighter than the current division. For that reason, and because of advances in helicopter self-deployment capability, strategic deployability of the division should actually be enhanced.

Further, the structuring of combat support and service support units into

numerous sub-elements allows the commander to tailor them with infantry units to make an appropriate package of tactically and logistically self-contained elements for independent missions or for attachment to a heavy force.

Light Infantry Battalion (9): The organizational structure should provide flexibility and a relatively simple span of control. Accordingly, organization based on the Chinese guerilla-like "by threes" model was selected because it best illustrated the flexibility necessary in close terrain operations. A squad should consist of three teams of three soldiers each and a squad leader. A company consists of three platoons of three squads each plus a company mortar section. Three light infantry companies and a headquarters company comprise each battalion. The battalion headquarters company includes a scout platoon, a mortar platoon, a medical platoon, and a support platoon.

Weapons and equipment should be manportable. Each squad should have an automatic weapon, a grenade launcher, and a sniper rifle along with night vision equipment, a laser designator, a position reporting device, and a radio capable of communicating to artillery. Company mortar sections should have three 60mm mortars. Battalion mortar platoons will have six 81mm mortars capable of firing autonomously homing anti-armor projectiles. Each scout team has a radio and laser designator. All radios have the capability for encoded, digital burst transmission. Personnel should be cross-trained to operate all organic equipment; support platoon members should be trained in sling loading, pathfinder techniques, driving various civilian and military vehicles as well as using human and animal power for transportation. Austere logistical support means living off the land and the enemy will be common. Special weapons such as Stingers and the AAWSM should be consolidated at battalion and issued prior to an operation. Distribution will be based on mission and enemy considerations.

All personnel should be infantrymen except for medics and attachments.

Infantrymen can operate as forward observers with attached artillery and air force officers at company and battalion level for planning assistance. Engineer specialists will not be necessary as infantrymen will be trained in sapper techniques. Using infantrymen in the various staff and support positions will enhance protection and flexibility for the battalion. The support platoon can not only defend itself, it can act as a type of reserve. The shared background will also serve to foster cohesion and teambuilding in the battalion. To enhance trainability and combat effectiveness, infantry battalions will be assigned the highest proportion of soldiers from the upper mental categories.

Doctrine for employment will be traditional light infantry or quasi-guerilla tactics as described previously with the exception that lethal indirect fires and air support enable the battalion to defeat any enemy.

Brigade Headquarters (3): Organization should be a command group and staff with a military intelligence platoon. Weapons are for personal self defense only. Equipment would mainly be manportable radios. No vehicles would be present. The military intelligence platoon should have manportable intercept and direction-finding equipment. Personnel should consist of the commander and a small staff. The military intelligence soldiers will include linguists to analyze communications interceptions, conduct interrogations, and to exploit captured documents.

Doctrinally, the brigade headquarters should be a tactical headquarters. It would be protected by its smallness and capability to move in close terrain.

Division Artillery: Organization should be one howitzer battalion and one multiple launch rocket battalion. Each battalion should consist of three firing batteries of three platoons with three weapons each. Weapons should be 155mm howitzers and 120mm trailer mounted multiple rocket launchers. The howitzers will be of lightweight, composite material construction to enable helicopter

transportability. Rail gun or liquid propellant technologies will provide ranges of 50-60 kilometers. Fire direction computers, communications, and position reporting equipment on each gun and rocket launcher will enable independent operation and high accuracy. Laser-guided along with "fire and forget" munitions provide close to "one-round, one-kill" results. Rocket launchers would be towed, but would also be helicopter transportable. A 120mm caliber would enable cluster munitions or mines to be used for area targets at a range of 20-30 kilometers. Personnel should not include forward observers as infantry units will do their own observing.

Doctrine will require flexible operations based on the situation. Weapons should operate singly or in platoons with frequent ground and air displacement for protection and to ensure all infantry units are in range. Support relationships will be flexible with individual weapons having the capability for direct support of small units.

Aviation Brigade: The organizational structure should be one lift battalion of three companies of 15 helicopters each and three light attack helicopter battalions of three companies each with seven helicopters in each company. This provides sufficient lift helicopters to lift an entire infantry battalion or all of the firing elements of the howitzer or rocket launcher battalion at one time. It also provides enough helicopters to conduct the myriad of small lift missions necessary to support dispersed missions. Three battalions of attack helicopters gives the division commander the flexibility to mass their firepower or provide each of the brigades a battalion in support. Units divisible by threes enables attack helicopter commanders at all levels to conduct continuous operations under the system of 1/3 fighting, 1/3 moving, and 1/3 re-arming and re-fueling.

Lift helicopters will be Blackhawks or the equivalent. Attack helicopters

should be LHX. Both will be equipped for precision navigation, day and night nap of the earth flying, and on board electronics to jam or "spoof" air defense radar. LHX weapons capabilities include a cannon, air to air missiles, anti-radar missiles, and anti-armor or hard target "fire and forget" or laser guided missiles. Personnel should include two crews per helicopter as low maintenance downtime and day-night operations permit continuous helicopter utilization.

Doctrine for lift helicopters supporting dispersed operations by small ground elements should stress versatility and one ship or two ship operations. Lifts will include logistics, medical evacuation, infantry, sling loaded artillery, and fuel and munitions to establish forward operating points for attack helicopters. Light attack helicopter missions will include raids and attacks by fire, fire support for ground troops, counter-air, escort for lift helicopters, reconnaissance, and security missions. Both independent and support relationship missions may be assigned.

Division Support Command: Organization should be into three multi-functional forward support battalions and a multi-functional main support battalion. All elements should be divisible by threes to facilitate support of independent operations. Equipment should be austere and units will be expected to utilize civilian and captured stocks of transport and supplies. Personnel must therefore be trained to be resourceful and innovative in support.

Doctrinal employment should mainly involve keeping the aviation brigade and division artillery operational. Light infantry units must have priority of support as their needs will be critical, but the support will be of low volume.

Division Troops: Due to the self-sufficiency of infantry elements, division troops will not normally augment infantry units. Division troops will therefore be company sized elements designed to support the operations of headquarters, artillery, aviation, and service support units. See Appendix 2.

## VI. FUTURE IMPLICATIONS

At an earlier time, a commander could be certain that a future war would resemble past and present ones. The troop commander of today no longer has this possibility. He knows only that whoever fails to adapt the experiences of the last war will surely lose the next one.<sup>22</sup>

Planning for future battle is more vital today than ever. The pace of change in the modern world is ever accelerating. Failure to keep pace with or to anticipate change can result in dramatic failure, just as it did for the Greeks at Pydna and the French in 1940. Preparedness is often thought of as unit training and logistical readiness. It also includes anticipating the changing conditions of war and designing forces accordingly.

The battlefield of the future will be characterized by small, agile forces operating independently throughout the breadth and depth of the tactical battlefield; which in some cases will include the entire theater of operations. Using hit and run tactics and calling for destructive fires from long range artillery and air assets, such forces, whether heavy or light, will closely replicate the mobile and offensively oriented tactics of traditional light infantry. Due to the destructive power which both heavy and light forces can generate, employment of these forces will be based primarily on terrain and not on the enemy. Protection and maneuver capabilities will be optimized for light forces on close terrain and for heavy forces on more open terrain.

The proposed Light Infantry Division is designed to generate maximum combat power on the battlefield of the future in close types of terrain. It is designed to fight using traditional light infantry tactics supported by the latest high technology weapons and equipment. It is superior to all other types of force in close terrain. In mixed open and close terrain, the Light Infantry Division will accept heavy attachments or detach some of its elements to heavy forces to create the appropriate force mix. Regardless of task organization,

the light infantry style of fighting will not change. Static, positional defenses and concentrating troops for offensive operations simply provides the enemy attractive targets. The dispersed, mobile, small unit tactics of light infantry will dominate the battlefield.

The proposed Light Infantry Division provides the right kind of force for the future battlefield. It combines the historically effective tactics of light infantry with modern high technology to form a winning combination.

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APPENDIX 1-1

Figure 1: Weapons Ranges

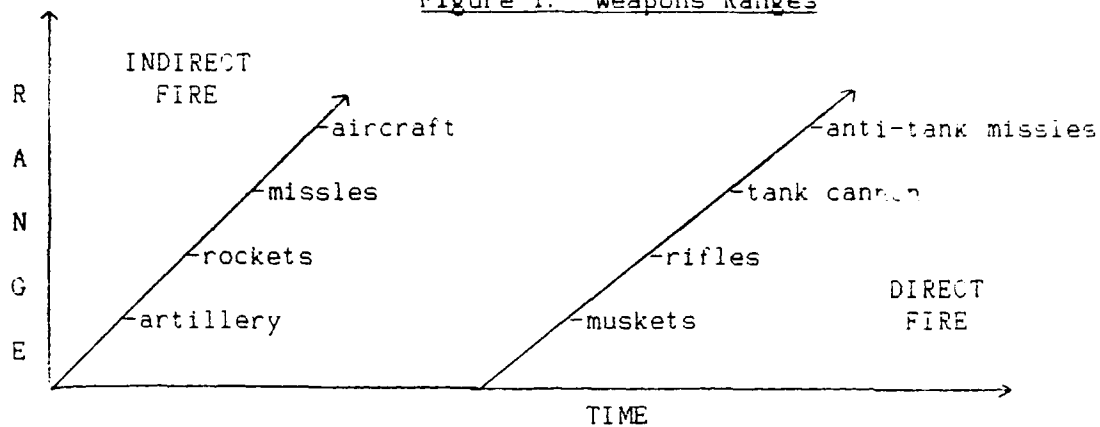
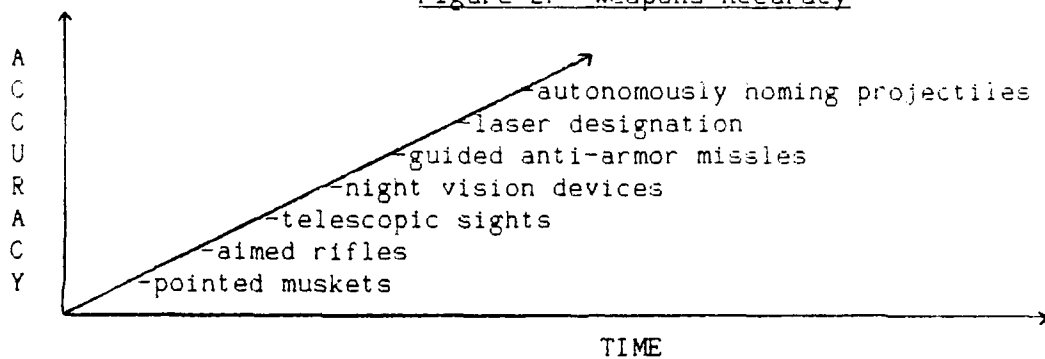


Figure 2: Weapons Accuracy



APPENDIX 1-2

Figure 3: Rate and Volume of Fire

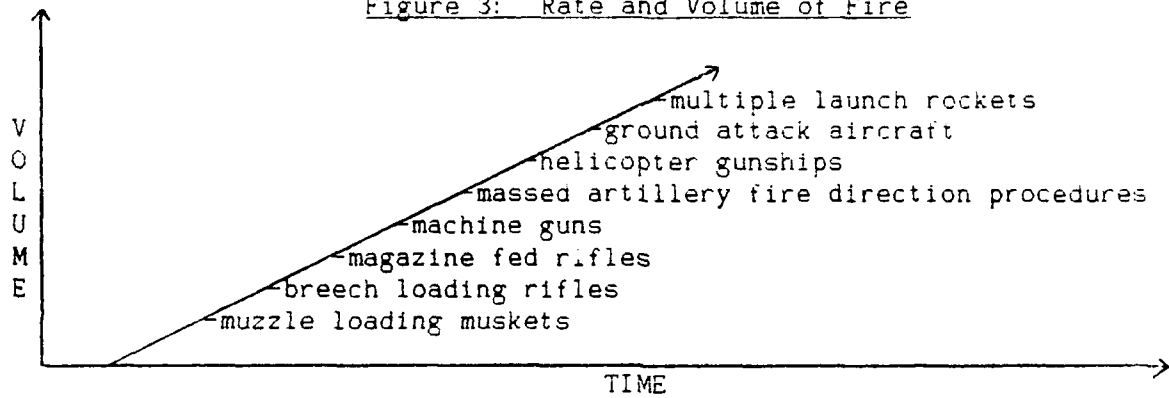
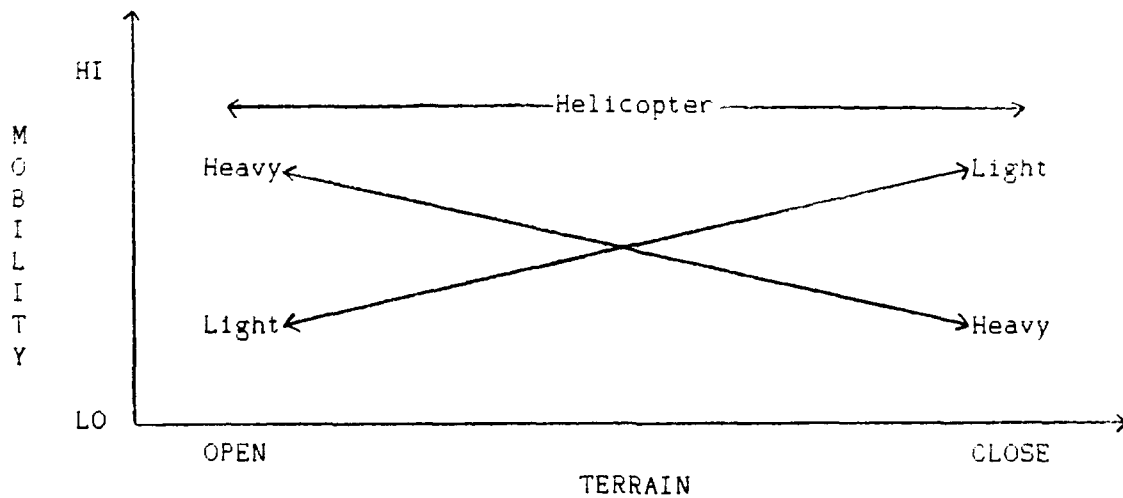


Figure 4: Mobility





APPENDIX 2

AIRLAND BATTLE-FUTURE LIGHT INFANTRY DIVISION

